CHAPTER 1

ENGINEERING DEPARTMENT ORGANIZATION

When you have read and understood this chapter, you should be able to answer the following learning objectives:

- Describe the engineering department organization.
- Describe the engineering department watch organization.
- Explain the use of directives in Navy organization.

Organization is the orderly arrangement of materials and personnel by functions. Sound organization is a requisite for good shipboard administration.

A shipboard organization is designed to carry out the objectives of its command. It is based on the assignment of responsibilities and authority to individuals within the organization. It includes essential functions, specific responsibilities of organizational units, and their duties, responsibilities, and authority. The *Standard Organization and Regulations of the U.S. Navy,* OPNAVINST 3120.32B, prescribes the administration organization for all Navy ships.

STANDARD SHIP ORGANIZATION

U.S. Navy Regulations, 1990, assign the commanding officer (CO) the responsibility to organize the officers and crew of a ship. The executive officer (XO) is responsible for the organization of the command as a whole. The heads of departments assign individuals to stations and duties within their departments.

The requirements for battle form the basis for the organization of combat ships and, as appropriate, for noncombat ships. Key officers head functional groups, such as those shown in figure 1-1, that make up the battle organization of such ships. The officers man specified stations and control the activities of personnel under their direction. Functional group control adds flexibility to the battle organization. That flexibility increases the organization's effectiveness when the ship executes the plan for battle or variations made necessary by the tactical situation.

The CO is head of the battle organization. He exercises command control and engages the enemy to the best of his ability. The following officers help the CO in his tasks: the navigator, operations officer, weapons officer (or first lieutenant), engineer officer, damage control assistant, air officer (aircraft carriers), and the combat cargo officer (amphibious operations). Each of these officers controls one or more of the major control functions of the ship in battle. Those functions (fig. 1-1) include ship control, operations control, weapons control, engineering control, damage control, air base control, and debarkation control. When embarked, the air group commander is responsible to the commanding officer in matters affecting the air group's readiness.

In many departments, the division of personnel (fig. 1-2) is similar to that in the shipboard battle organization. However, to meet the requirements of sound organization principles, the administrative organization structure must allow for certain functions that have no place in battle. Day-to-day routines emphasize training and maintenance, and certain support measures are necessary for administrative reasons. The five basic departments found in all ships are the navigation department, operations department, weapons department (deck department in some ships), engineering department, and supply department. An officer may head more than one department in ships that do not have enough officers to go around.

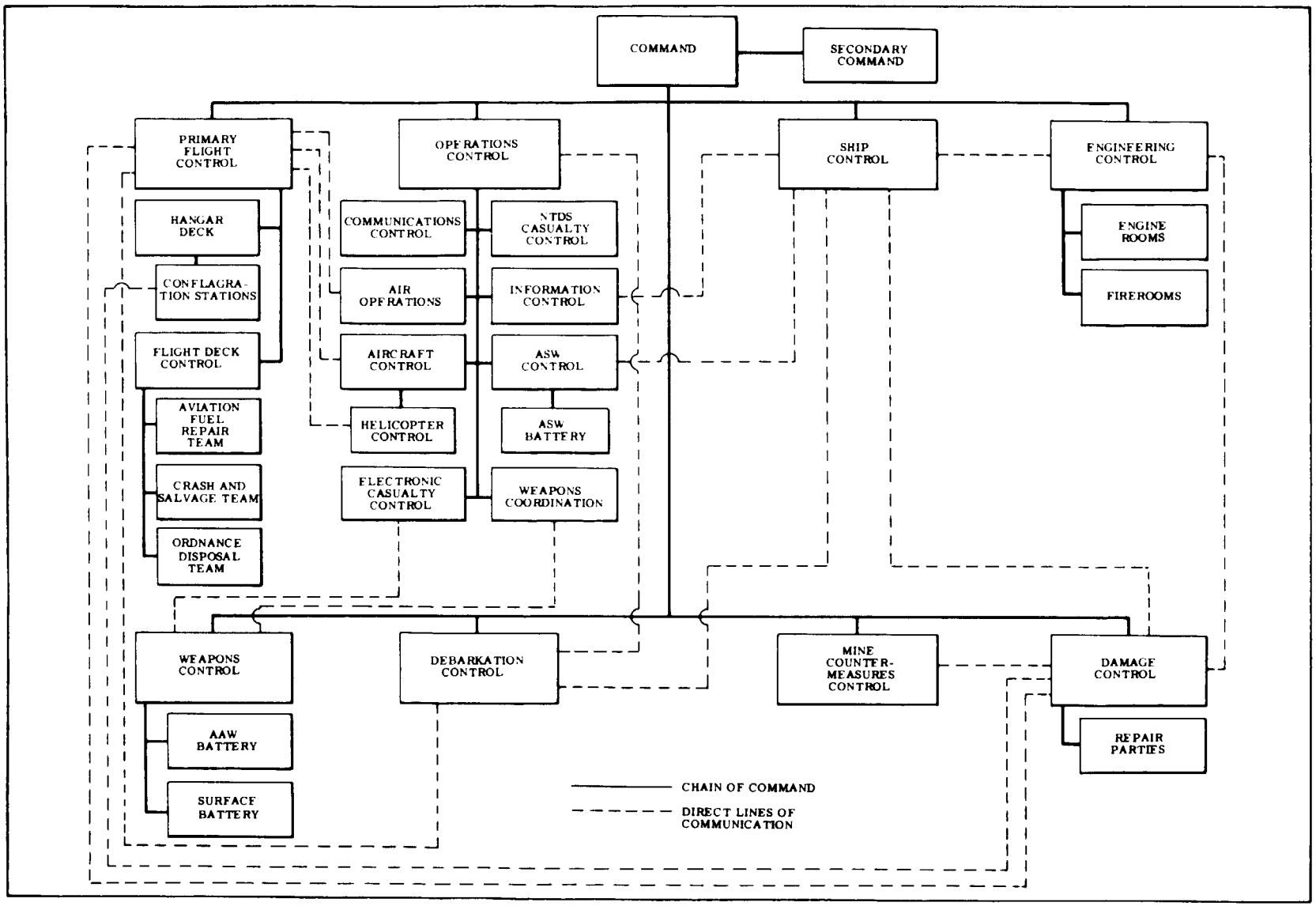

Figure 1-1.–Shipboard battle organization.

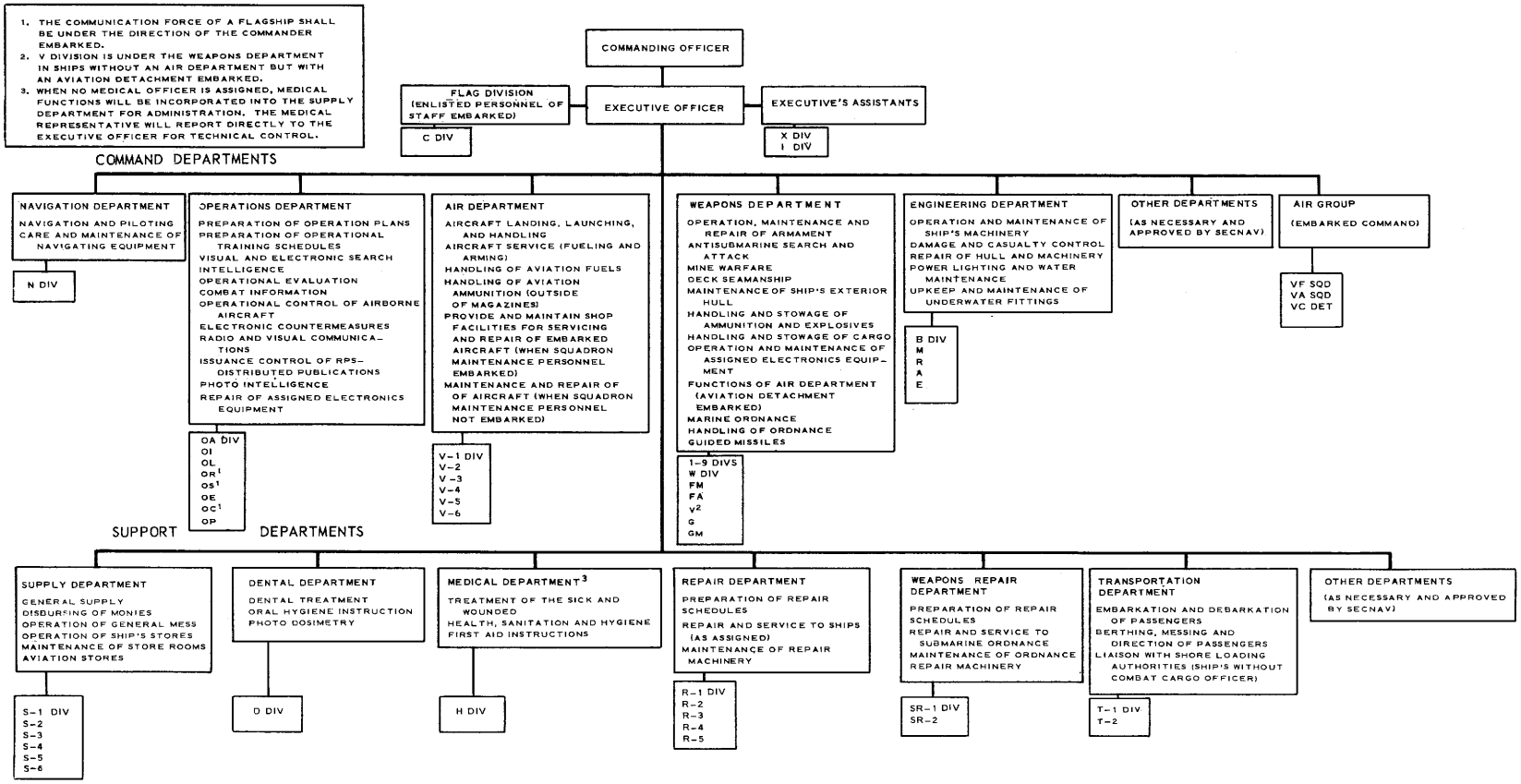

Figure 1-2.–Shipboard administration organization.

THE ENGINEERING ORGANIZATION

The engineer officer must organize the engineering department. An engineer officer who is assigned to a ship before it is commissioned will have to organize his department for the first time. Even on older ships with efficient and well-run departments, a newly assigned engineer officer may find that some reorganization is necessary.

All hands must understand the functional relationships within the department. Organizational charts and functional guides are the best means to make the details of an organization known. We will explain each in the following paragraphs.

Organizational charts show the arrangement of the various departments and divisions and the command staff relationships of personnel in the organization. An engineering department organization chart (fig. 1-3) shows the relationship among the engineer officer, his assistants, division officers, material officer, and leading petty officer billets. Keep this chart in the engineering department office (logroom).

There are two commonly used types of organization charts: structural and functional. A structural organization chart (fig. 1-3) outlines the basic relationships between the various components of the organization. A functional organization chart presents the functions of the various segments of the organization and the interrelationships of those functions.

An organization chart provides all personnel in an organization with a concise picture of the relationship of individuals within the organization. In a large organization, charts should be prepared for each level, becoming more detailed as they illustrate smaller segments of the organization. In smaller commands, charts of only the department organization may serve.

Functional guides are primarily job descriptions that show a clear path of delegated authority. These guides set forth instructions for the basic objective of each billet; the duties, responsibility, and authority applicable to the billet; and the organizational relationships defining the accountability between the incumbent and his supervisor (fig. 1-4).

Ship organization and regulations manuals provide organization charts and functional guides to ship's personnel in an easily referenced form. OPNAVINST 3120.32B includes the following requirements as a minimum:

- Descriptions, both written and graphic, of the ship's administrative organization from the commanding officer's level downward and of the watch organization through all levels
- Organizational bill of the ship
- Ship's regulations

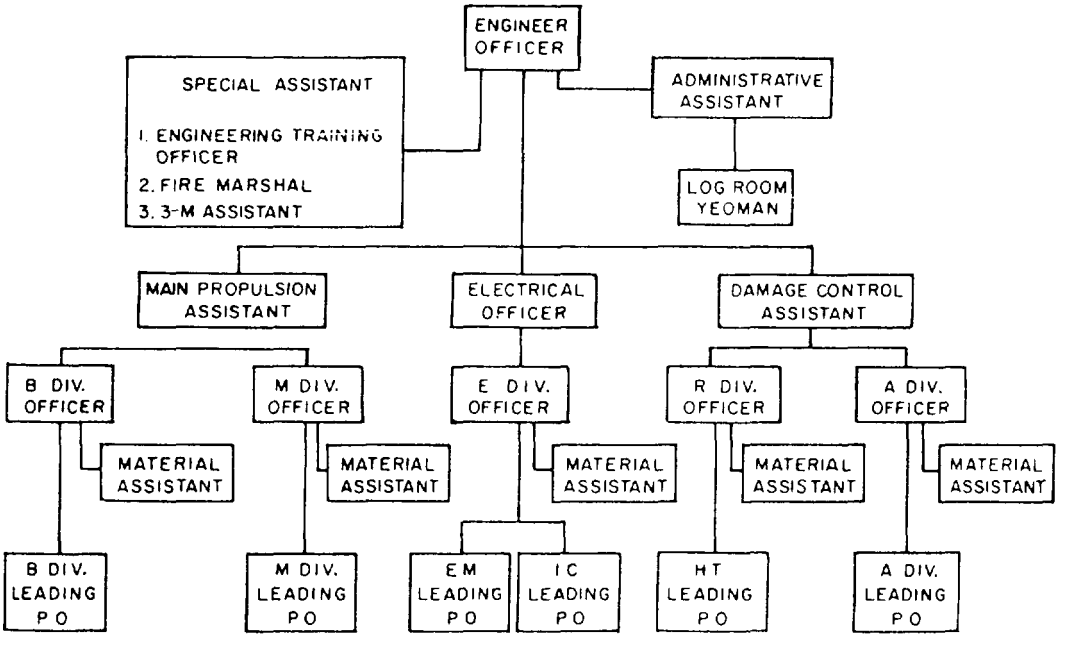

Figure 1-3.—Typical engineering department.

1326. Basic Functions

The engineer officer is responsible, under the commanding officer, for the operation, care, and maintenance of the ship's main propulsion plant, auxiliary machinery, and piping systems; for the control of damage; for the operation and maintenance of electric power generators and distribution systems; for repairs to the ship's hull; and for repairs to material and equipment of other departments which are beyond the capacity of those departments but within the capacity of the engineering department.

1327. Duties, Responsibilities, and Authority

The engineer officer shall:

1. Maintain the hull, machinery and electrical systems in battle readiness.

2. Supervise fire fighting.

3. Maintain interior communication equipment in the ship.

1328. Organizational Relationships

1. The engineer officer reports to:

a. The commanding officer for the operational readiness and actual operation of the main propulsion and electrical plants and of the damage control organization and systems.

b. The executive officer for administration of the engineering department.

2. The following report to him:

a. Damage control assistant

b. Main propulsion assistant

c. Electrical officer

d. Administrative assistant (engineering)

e. Special assistants (technical assistants for nuclear, biological, and chemical defense; fire marshal)

f. Department training officer

Figure 1-4.-Format for a functional guide.

When the type commander (TYCOM) decides it is necessary, the *Standard Organization and Regulations of the U.S. Navy,* OPNAVINST 3120.32B, is supplemented by department and division organization manuals. These manuals contain organization charts and functional guides through all supervisory levels. Where appropriate, functional guides are also provided for watch standers.

The engineer officer and engineering division officers are responsible for issuing and maintaining their respective department or division organization manuals. The CO must approve the engineering department organization manual when it is issued. The engineer officer must approve any division organization manual issued for divisions under his control. OPNAVINST 3120.32B contains detailed instructions on the preparation of department and division organization manuals.

Every officer in the engineering department must ensure the operational readiness of the department and thereby the operational readiness of the ship. Morale, training of personnel, and maintenance of materials are essential for readiness. Proper administration of the department promotes and sustains these factors. Effective administration demands planning, organizing, commanding, and controlling. Of all the elements of administration, organization (the machinery of administration) is the most important. The effectiveness of the engineering department organization depends upon the following principles: (1) unity of command, (2) homogeneity of assignment, (3) span of control, and

(4) delegation of authority. We'll discuss each of them in the following paragraphs:

1. Unity of command requires the following practices: (1) a person reports directly to, and receives orders from, one superior; (2) one person must have control over one segment of the organization, and he alone must issue all orders to, and receive all reports from, that segment; and (3) all personnel in the engineering department must know whom they direct and to whom they report.

To accomplish unity of command within the department, the chain of command has to be definite, clear-cut, understood, and obeyed by all. When the chain of command is ignored, either from the top down or from the bottom up, the result is confusion and conflict.

Departments are organized into divisions, where practical. Those divisions are assigned battle stations as units under their own officers and petty officers. OPNAVINST 3120.32B lists the standard letter and numeral designation of divisions of all types of ships. When it is necessary to establish a division not listed or when functions of two or more divisions are combined as a single division, the TYCOM assigns a suitable letter or numeral that conforms as nearly as possible to designations already assigned. We'll discuss engineering department divisions later in this chapter.

The engineer officer must make every effort to indoctrinate his division officers so they are made aware of the importance of maintaining the chain of command.

2. Homogeneity of assignment requires the following practices: (1) each division in the department is assigned closely related tasks, (2) each unit under a division is assigned specific functions to perform, (3) individuals are assigned to divisions according to their abilities, and (4) individuals are not assigned to direct unrelated groups unless it is unavoidable.

3. Span of control requires the following practices: (1) the type of work to be done and the degree of complexity and responsibility involved, (2) the number of personnel supervised by one person, (3) the area involved in the supervision, (4) the time available, and (5) the way in which the supervisor should use the time.

4. Delegation of authority should be commensurate with assigned responsibility to the lowest level of competence within the department. Delegation does not relieve an officer of responsibility and accountability for the actions of the person to whom he delegates authority.

The TYCOM (or higher authority) establishes the requirements for organization. He issues organization charts and functional guides that encourage the use of the best techniques known for the operation of the engineering department and the administration of assigned personnel. The process of organization has two aspects–the mechanical, which deals with organization structure; and the dynamic, which deals with the integration of the human factors into the organization structure. While higher authority is responsible for the mechanics of the organization, the engineer officer is responsible for effective administration.

THE ENGINEER OFFICER

The engineer officer is the head of the engineering department and is responsible to the CO in all matters pertaining to his department. All personnel in the engineering department are subordinate to the engineer officer. In addition to the general duties that apply to all heads of departments in naval ships, the engineer officer has certain duties peculiar to the head of the engineering department. The general and specific duties, responsibilities, and authority of the engineer officer and his assistants are prescribed in OPNAVINST 3120.32B and discussed briefly in the following pages.

General Duties

The engineer officer will normally report to and confer with the XO for the administration of the engineering department. However, he may confer directly with the CO in any matter relating to the engineering department whenever he believes such action is necessary. But, he must keep the XO informed of such matters.

The engineer officer must keep the CO informed of the operational readiness and actual operation of the main propulsion and electrical plants and of the damage control organization and systems. The CO must approve the disabling of any machinery or equipment in the engineering department if such action will adversely affect the safety or operation of the ship. When such disablement will adversely affect the ship's ability to accomplish its mission, the TYCOM or fleet commander (as appropriate) also must approve. During the ship's operating periods, the disablement of major items of machinery to perform routine maintenance should be kept to a minimum.

Other general duties of the engineer officer include the following:

- Organize the department, train and assign personnel, maintain material, and ensure optimum readiness for battle.
- Prepare and maintain bills and orders necessary for proper organization and efficient operation of the engineering department.
- Indoctrinate and supervise persons within the department and others under his control to ensure strict observance of all prescribed and necessary security measures and safety precautions. This requires proper posting of all safety precautions and frequent training in security measures and safety precautions.
- Frequently inspect personnel, material, and spaces assigned to the engineering department to correct defects and deficiencies. The engineer officer or his representative should inspect the department each day and report results of the inspection to the XO.
- Control the expenditure of allotted funds and operate the engineering department within the limit of such funds.
- Practice economy in the use of public funds.
- Maintain records and submit reports required of the engineering department.
- Maintain, preserve, and ensure security of spaces assigned to the engineering department.
- Anticipate personnel and material needed in the engineering department and submit timely requests to fulfill requirements.
- Cooperate with other department heads for coordination of effort of the entire command.
- Perform such other duties as may be assigned.

PROSPECTIVE ENGINEER OFFICER.— Usually, when an officer reports to a ship in commission to relieve the engineer officer, the relief is effected jointly by the two officers concerned. In this case, the job of the incoming officer is relatively simple and he can get a lot of help from the incumbent.

At other times, an engineer officer may be assigned to a ship before it is commissioned. In this case, the circumstances are quite different. He performs the duties of engineer officer subject to the orders of the officer to whom he has reported for duty. If his ship is being constructed, he will initially organize the engineering department as well. He will establish and maintain working relations with shipyard personnel; attend to the numerous details concerning inspection of machinery, tests, trials, and equipage; prepare casualty control and repair party manuals, operating instructions, and safety precautions; select personnel for certain jobs; train assigned personnel; and perform the many other details required on a new ship before it is commissioned. The job will be less complicated if the ship has been in commission previously, as in the case of the major conversion of a reactivated ship.

In any event, the job of the prospective engineer officer will be easier if he has had previous experience in the engineering department of a naval ship. One of the first things he should do is prepare a checklist of all required publications, logs, records, and reports. Such a list will make it easier to organize the engineering department and determine that the necessary publications, logs, records, and reports are complete, correct, and up to date before he relieves the engineer officer. The *Naval Ship's Technical Manual;* the *Damage Control Manual,* the NWP 62-1; the *U.S. Navy Regulations,* 1990; the NAVSEASYSCOM directives; and the TYCOM's directives will be helpful in the preparation of such a checklist.

DUTIES UPON DETACHMENT.— When the engineer officer of a ship is ordered detached, the officer and his relief must jointly inspect the material and records of the engineering department. Upon completion of the inspection, the two officers submit a joint report to the CO. The report lists any defects or deficiencies, describes the status of transfer of the equipage charges to the department or subdivision (not required in organizations where equipage is held in the plant account), and states the facts in dispute when there is any disagreement. The CO determines the actual conditions, fixes responsibility for them, and takes such actions as may be necessary to complete the following procedures.

During the joint inspection of the engineering department, the relieving officer should do the following:

- Inspect operation of the engineering plant at anchor and underway (if possible).
- Investigate any recent engineering casualties.
- Inspect all spaces for cleanliness, preservation, and posting of safety precautions and operating instructions.

- Check the job orders completed during the last regular overhaul.
- Check the status of authorized alterations and outstanding shipyard and tender or repair shops work requests.
- Observe the actions of watch personnel during casualty drills.
- Check feedwater and fuel consumption.
- Inspect and observe operation of the damage control battle organization.
- Inventory damage control lockers.
- Check the routine for handling correspondence and note any outstanding correspondence requiring action.
- Check the status of required engineering exercises to determine outstanding requirements.
- Inspect engineering department ship operations.

The relieving officer should review the personnel records of engineering department personnel as to the number assigned, their qualifications, and their assignments. He should inspect all personnel of the department at quarters at least one time before effecting relief. He must include a statement in his relieving letter as to whether enough qualified engineering department personnel are on board and list any shortages.

Before relieving the engineer officer, the relieving officer should determine whether all required logs, records, publications, and reports are being maintained and are correct, complete, and up to date. He should note any discrepancies in the engineer officer's relieving letter.

To determine the amount and condition of the equipage and supplies in the custody of the engineer officer, the relieving officer must inspect outstanding requisitions of the engineering department and inspect inventory, storage, and preservation of engineering storerooms and toolrooms. After conducting an inventory of accountable equipment in the custody of the engineer officer, the relieving officer signs the necessary custody cards. The officer being relieved must prepare surveys on all missing accountable equipage.

Circumstances may prevent the engineer officer and his relief from making a joint inspection and report. When this occurs, the relieving officer must make the inspection as soon as possible and submit his report to the CO within 20 days after taking charge of the engineering department.

The relieved engineer officer sends the CO a letter that reports the relief and the conditions existing in the engineering department. He sends it via the relieving officer, who endorses it after he agrees that it contains no omissions or exceptions. The relieving officer should make sure the condition of the department as stated in the relieving letter reflects the actual conditions. If they do not, he may be embarrassed when the CO requires an explanation of an engineering casualty or other unusual condition.

Specific Duties

The engineer officer is responsible for the operation, care, and maintenance of the ship's main propulsion plant, electric power plant, auxiliary machinery, piping systems, and interior communications systems; for the control of damage; and for repairs to the ship's hull. When requested by the head of the department concerned, the engineer officer may become responsible for the repairs of material and equipment that are beyond the capacity of the personnel or equipment in other departments but within the capacity of the engineering department.

As an example of a specific duty, the engineer officer must keep himself fully acquainted with the general condition of each boiler and the manner in which it is being operated and maintained. He should make periodic inspections for that purpose.

The engineer officer must assure himself that idle boilers are properly laid up at all times, that, while steaming, fuel oil is free of seawater, and that feedwater is within prescribed limits.

He must be sure all parts of the boiler are carefully examined whenever they are exposed for cleaning and overhaul. The conditions observed must be described in the boilerwater treatment log and the engineering log. All unusual cases of boiler damage or deterioration discovered at any time should be reported to the TYCOM. If the damage is important enough, or if the ship needs technical assistance from the Naval Sea Systems Command (NAVSEASYSCOM), a copy of the correspondence should be forwarded to NAVSEASYSCOM.

The Assistants to the Engineer Officer

The engineer officer is assigned assistants as may be required for damage control, main propulsion,

electrical, and other engineering department functions. The engineer officer will make sure his assistants perform their assigned duties, or he will perform those duties himself when no assistant is available for a given billet. The duties and responsibilities of the engineer assistants are explained in the following paragraphs.

THE MAIN PROPULSION ASSISTANT (MPA).– The MPA is responsible to the engineer officer for the operation, care, and maintenance of the ship's propulsion machinery, its related auxiliaries, and such other auxiliaries as may be assigned. In ships where there are not enough officers for all billets, the MPA may also serve as the main engines (M) and boilers (B) division officer.

The MPA is specifically responsible for the reliability and effective operation of the ship's main engines, boilers, and assigned auxiliaries. He must make, or assign reliable subordinates to make, frequent inspections of all the machinery and equipment for which he is responsible. In addition, the MPA must make sure necessary inspections, tests, repairs, and adjustments are completed subject to required authorization and according to NAVSEASYSCOM and manufacturer's technical manuals. He must personally supervise the operation of the main propulsion plant when the ship is getting underway, coming to anchor, and at other times when unusual care is necessary. Except in cases of emergency, he must get the CO's permission before fires are lighted or secured under a boiler. He must make sure that main engines are not turned except with permission of the officer of the deck (OOD).

The following paragraphs describe more specific duties of the MPA:

- The care, storage, and expenditure of fuels and the maintenance and security of fueling systems (except for aircraft and missiles) and the maintenance of fuel records, including a daily fuel report to the CO.

- Proper preparation, care, submission, and disposition of the Engineering Log and Engineer's Bell Book. He is required to inspect them at least daily and ensure their proper maintenance and timely submission.

- The preparation, care, and disposition of such operation, maintenance, and other engineering records as may be prescribed by NAVSEASYSCOM or other authority.

The MPA must know the operational characteristics of the equipment and machinery under his control so he can observe and interpret their results. He must inspect spaces, machinery, and equipment and obtain useful information from the logs, records, and reports.

There is no substitute for experience, but an MPA may be assigned before he has time to gain that experience. Therefore, he must use every opportunity to improve his knowledge of machinery and equipment through self-study and fleet-operated schools.

The MPA can gain considerable self-confidence and knowledge by qualifying himself and each of the watch officers in the procedures for warming up and securing each major item of machinery in the main engineering plant. A previously qualified officer or the engineering chief petty officer may conduct this training.

The MPA can find information on equipment and machinery in his own ship in publications such as blueprints and manufacturer's technical manuals. These are readily available in the logroom. Two of the most important reference books in the engineering department are the *Naval Ships' Technical Manual (NSTM)* and the *Ship Information Book*. He can learn a great deal about the location, condition, size, and description of the machinery and equipment in the engineering department by observing it during operation, when idle, and during maintenance procedures. He should read the manufacturers' nameplates for data on safe operating limits, capacities, and other useful information.

To the more knowledgeable officer, comparison of past and present performance records, reports, and logs will show the condition of the engineering plant and will often disclose areas in need of repairs. Evaluation of information gained from these sources depends upon the completeness of the records, reports, and logs, and the professional integrity of those who prepare them.

The MPA should never overlook the knowledge of more experienced officers, chief petty officers, supervisors, and equipment operators. He should always have the supervisor of the space accompany him on his inspection tour. The supervisor can then answer questions and receive orders concerning the space and machinery.

THE DAMAGE CONTROL ASSISTANT (DCA).– The DCA is responsible for the effective damage control organization; for repairs to the ship's hull, machinery, and piping systems except as specifically assigned to another division or department; and for the maintenance and submission of logs, records, and reports required in connection with his assigned functions.

Normally, the auxiliaries (A) and repair (R) division officers are responsible under the DCA. But the DCA performs those duties in ships where there are not enough officers to fill the billets.

The DCA now is responsible for two functions that were formerly collateral duties. They are chemical, biological, and radiation (CBR) defense officer and gas-free engines.

As the CBR defense officer, the DCA should be a graduate of a comprehensive CBR defense course. He acts as technical advisor to the CO and the engineer officer in matters concerning CBR defense. He assists division officers in the CBR warfare training of personnel in the ship and is responsible for the indoctrination and training of the damage control battle organization in this type of warfare.

As gas-free engineer, the DCA must organize and administer a training program to inform all hands of the hazards involved in entering closed or poorly ventilated spaces and in welding and allied operations. He is responsible for the posting of a warning of such hazards in spaces where they exist. He is authorized to order personnel out of a compartment immediately or to suspend work whenever an unsafe condition exists. He must immediately notify the CO, engineer officer, or other responsible authority of any such work stoppage and the reason for it.

THE ELECTRICAL OFFICER.— The electrical officer is responsible for the operation, care, and maintenance of the ship's electric power generators and distribution systems, interior communications equipment and systems, gyrocompass equipment and systems, degaussing equipment and associated systems, dead reckoning analyzer and associated equipment, and small boat electrical systems. He is also responsible for the maintenance of all other electrical and electronic equipment, machinery, and systems not specifically assigned to another division or department; and the preparation, maintenance, and submission of logs, records, and reports required in connection with his assigned duties. The DCA serves as the electrical officer when the ship does not have enough officers to fill the billet.

The electrical officer is usually assigned collateral duty as SITE TV officer. In this capacity, he is responsible for the procurement, storage, and scheduling of closed circuit television (CCTV) programs; for training on CCTV systems and associated equipment; and for the preparation, maintenance, and submission of the required logs, records, and reports for motion picture programs and equipment.

THE ENGINEERING ADMINISTRATIVE ASSISTANT.— The engineering administrative assistant is an aide to the engineer officer. The MPA assumes these duties when the ship does not have enough officers to fill the billet. The engineering administrative assistant has the following responsibilities:

- Operation of the logroom, maintenance of the equipment assigned, and the maintenance and preservation of the space assigned
- Assignment, training, supervision, and evaluation of the logroom Yeomen (YN) and other enlisted personnel assigned to the logroom
- Maintenance of the engineering department watch bills

The engineering administrative assistant screens all incoming engineering department correspondence, initiates required action (when appropriate), and checks the accuracy of all correspondence leaving the department. He helps the engineer officer implement directives from higher authority that pertain to the engineering department. He also helps prepare engineering department directives and disseminates them after the engineer officer releases them.

The engineering administrative assistant must supervise the logroom because it affects each of the engineering divisions and reflects the effectiveness of the engineering department. He must properly store blueprints, technical manuals, and other publications and index them so they can be easily located. He must establish methods to account for the publications that have been removed from the legroom and keep their removal to a minimum. He must hold periodic inventories so missing items can be promptly reordered. He must enter changes as soon as possible to make sure the publications are kept up to date and file logs, records, and reports for easy reference. To avoid clutter in the logroom, he must establish a plan for the prompt disposition of logs, records, and reports according to current instructions.

SPECIAL ASSISTANTS.— Special assistants to the engineer officer include the engineering training officer, the fire marshal, and the 3-M assistant.

The Engineering Training Officer.— The engineering training officer is an assistant to the engineer officer for the administration and coordination of the department's training program. The duties,

responsibilities, and authority of the engineering training officer are discussed in detail in chapter 3 of this publication.

The Fire Marshal.— The tire marshal is responsible for the maintenance, availability, and reliability of the fire-fighting equipment in the ship and for the elimination of fire hazards. He helps the DCA prepare and administer the training of personnel in the ship's damage control battle organization. He must also keep the DCA informed of his actions.

The 3-M Assistant.— The 3-M assistant is responsible for the administrative review and coordination of the engineering department 3-M program. He maintains and submits all records and forms pertaining to the engineering department divisions.

ENGINEERING DIVISIONS

The engineering department of a naval ship is organized into divisions. Each division is headed by a division officer appointed by the CO. Each division officer is responsible for the organization, administration, and operation of his division(s). The basic administrative organization of a shipboard division is shown in figure 1-5. The number of sections in each unit depends upon the number of watches in the individual ship.

The engineering division officers are responsible, under the engineer officer, for the operation, care, and maintenance of assigned machinery, equipment, and systems. The division officer makes sure his assistants (technical and material assistant, division training officer) properly perform their duties. He will perform those duties himself when no assistants are assigned. The assistants must keep the engineer officer informed of the operational readiness of assigned machinery, equipment, and systems.

The engineering department is divided into the following divisions: auxiliaries (A), boilers (B), electrical (E), main engines (M), and repair (R). All the divisions are not in the engineering department of all ships. The types of divisions assigned to the engineering department depend on the functional requirements; for example, the engineering department of a ship with no main boilers has no boiler division.

The watch, quarter, and station bill is the division officer's summary of assignments of personnel to duties and stations specified within each of the ship's bills. Its primary purpose is to inform division personnel of those assignments. The number of divisions assigned to the engineering department is based upon the ship's complement and allowance.

Personnel in the engineering department are assigned locker and berthing facilities according to the

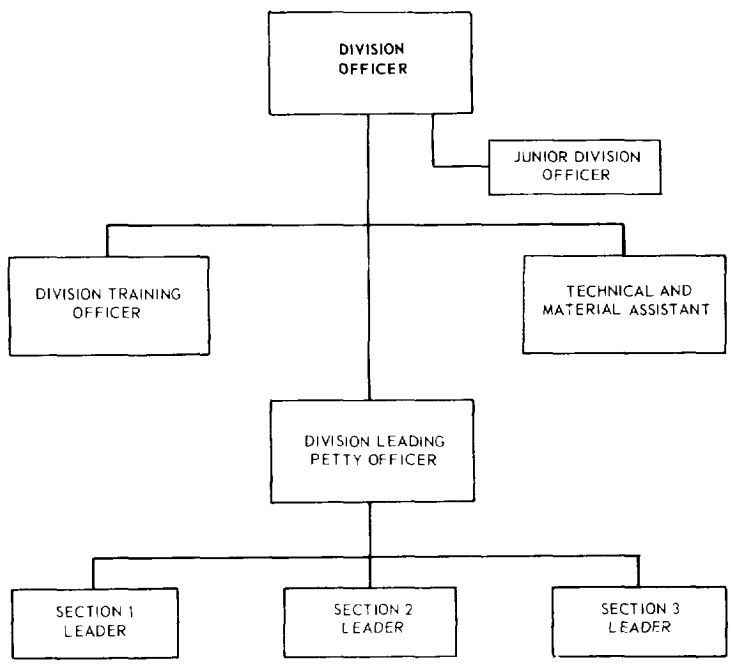

Figure 1-5.—Basic shipboard division organization.

ship's berthing and locker bill. Divisions are assigned responsibilities for the cleanliness of the exterior and interior of the ship's hull, hull fittings, machinery, and equipment according to the ship's cleaning and maintenance bill. The berthing and locker bill and the cleaning and maintenance bill are administrative bills of the *Standard Organization and Regulations of the U.S. Navy,* OPNAVINST 3120.32B. We'll explain the role of the engineering department divisions on the following pages.

Auxiliaries Division

The A division officer heads the auxiliaries division. Personnel of the Engineman (EN), Machinist's Mate (MM), and Machinery Repairman (MR) ratings are assigned to the division.

The A division is responsible for the cleanliness and maintenance of such spaces as the air-conditioning machinery room, air compressor room, anchor windlass room, emergency generator room, evaporator room, fire pump room, fan rooms, internal combustion engine shop, refrigeration machinery room, steering gear room, machine shop, auxiliary machinery room, aircraft elevator machinery room, and boat winch machinery room.

The A division is generally responsible for the preventive and corrective maintenance of winches and cranes, emergency generators, air-conditioning and refrigeration equipment and systems, laundry and dry-cleaning machinery, galley machinery, steering engines, anchor windlasses, air compressors and compressed air systems, emergency fire pumps, boat engines and boat propulsion machinery, internal combustion engines not specifically assigned to another department, distilling plant machinery and equipment, auxiliary boilers, hydraulic systems, elevator machinery, ventilating equipment, and heating systems.

Boilers Division

The B division officer heads the boilers division. Personnel of the Boiler Technician (BT) rating are usually assigned to the division.

The B division is responsible for the cleanliness and maintenance of such spaces as the firerooms, forced draft blower room, fuel oil storage tanks, fireroom uptake spaces, and the fuel oil test laboratory. The B division is generally assigned the preventive and corrective maintenance of the boilers, fireroom auxiliaries, forced draft blowers, fuel and water testing apparatus, the equipment for fueling at sea, and fuel oil piping and pipe fittings.

Electrical Division

The E division officer heads the electrical division. Personnel of the Electrician's Mate (EM) and Interior Communications (IC) ratings are assigned to the division.

The E division is responsible for the cleanliness and maintenance of such spaces as the electrical shop, gyro room, IC room, IC shop, storage battery room, battery locker, underwater log compartment, winch controller rooms, wiring trunks, and switchboard rooms. The E division is generally assigned the preventive and corrective maintenance of all electrical motors, generators, and controllers not specifically assigned to another department. They are also assigned degaussing systems, electrical distribution systems including cabling and switching and protective equipment, gyrocompasses and related equipment such as the dead reckoning analyzer and dead reckoning tracer, battery charging equipment, underwater log systems, small boat electrical systems, automatic and sound-powered telephone systems, lighting systems, closed-circuit television systems, IC systems including ship control and indicating systems, portable announcing systems, the magnesian compass system, and portable electric tools.

Main Engines Division

The M division officer heads the main engines division. Personnel assigned to this division are MM for steam engines, EN for diesel engines, or Gas Turbine Systems Technicians (GS) for gas turbine engines.

The M division is responsible for the cleanliness and maintenance of such spaces as the engineering department office, engine room uptake spaces, freshwater and feedwater tanks, engineering storeroom, and shaft alleys. The M division is generally assigned the preventive and corrective maintenance of the main engines and propulsion maintenance including the shafting, engine room auxiliaries, ship's service generator drive units, and engine room piping systems.

Repair Division

The R division officer heads the repair division. Personnel of the Hull Technician (HT) and Damage Controlman (DC) ratings are assigned to the division.

The R division is responsible for the cleanliness and maintenance of such spaces as the carpenter shop, structural shop, pipe shop, gas mask and protective clothing lockers, repair party lockers, and the central control station; that is, damage control central (DCC). The R division is generally assigned the preventive and corrective maintenance of damage control equipment, fire-fighting equipment, hull fittings, and piping systems not otherwise assigned. The R division provides welding and allied services to other divisions as required.

ENGINEERING DIVISION PERSONNEL

Personnel in the engineering department divisions normally include the division officer, a technical and material assistant, and the required enlisted personnel.

The Division Officer

The division officers will have the other duties, responsibilities, and authority listed in the following paragraphs:

- Direct the operation of the division through leading petty officers according to the division organization.

- Assign division personnel to watches, battle stations, and general duties. Institute a system to rotate personnel between stations and duties to develop their skills.

- Schedule and conduct training for personnel in the division. This training should indoctrinate new personnel and help all personnel prepare for advancement in rating. Training should include correspondence courses, Personnel Qualification Standards (PQS), individual instruction in shipboard duties, team training as necessary to fulfill operating requirements of the division, and instruction in the principles of effective leadership. The division officer receives training guidance from the educational services officer (ESO).

- Evaluate the performance of enlisted personnel in the division. Initiate recommended grades for the senior petty officer in the division and review the senior petty officers' evaluations of the members under their supervision.

- Maintain a division notebook containing personnel data cards, training program data, a space and equipment responsibility log, watch and battle stations requiring manning by division personnel, and other useful data for ready reference and for orientation of the division officer's relief. Use standard record forms available through the general supply system.

- Ensure proper preparation, maintenance, and submission of all forms, records, logs, reports, and correspondence required of the division.

- Establish and maintain a division organizational manual and other directives necessary for the administration of the division.

- Make sure all prescribed security measures and safety precautions are strictly observed by division personnel.

- Recommend personnel for advancement in rating and for transfers.

- Recommend changes in division personnel allowances.

- Forward requests for leave, liberty, and special privileges, with recommendations.

- Conduct periodic inspections, exercises, and musters to evaluate performance and discipline of the division. When disciplinary action is necessary, be sure it follows the *Uniform Code of Military Justice* and other regulatory directives. Only the CO may impose disciplinary punishment for minor offenses without the intervention of a court-martial. This authority of a CO cannot be delegated. **(NOTE:** The division officer and/or the department head attends captain's mast whenever one of their personnel appears before the CO for such action. They are there to represent the person and respond to any questions the CO may have concerning the person's professional abilities.)

- Temporarily assign enlisted personnel to special duties in other departments on the ship according to the ship's master-at-arms (MA) force (usually for a period of 6 months) and duty in the supply department as messdecks MA (usually for a period of 6 months), or as messman (for a period of 3 months). Normally, no one is assigned to two consecutive 3-month tours of duty as messman and no one may involuntarily be assigned to a second 3-month tour without the XO's approval. The XO must approve transfers of enlisted personnel between departments. The engineer officer must approve all transfers of enlisted personnel between divisions of the engineering department. In all instances, transfers of enlisted personnel must be reported to the personnel officer for purposes of record.

The Technical and Material Assistant

The technical and material assistant, when assigned, is usually a warrant officer or a limited duty officer. His primary job is to supervise the maintenance and repair of the material, equipment, and systems for which the division is responsible.

The technical and material assistant has the following responsibilities under the division officer:

- Ensure proper performance of preventive and corrective maintenance procedures on all equipment, material, and systems assigned to the division.
- Review for technical accuracy all completed Maintenance Data Collection System (MDCS) documents and report the completion of maintenance.
- Ensure preparation, maintenance, and timely submission of material, equipment, and system records, reports, and logs required of the division.
- Ensure the preparation and timely submission of requests for repairs parts and other materials necessary for the efficient operation of the equipment, material, and systems assigned the division.
- Ensure repairs to equipment and material of other divisions that are beyond the capacity of those divisions but within the capcity of his division.
- Perform other duties as may be assigned.

The Enlisted Personnel

While the rating structure is the basis of the Navy's enlisted occupational classification structure, it is supplemented by the enlisted classification coding structure.

The *Manual of Navy Enlisted Manpower and Personnel Classifications and Occupational Standards,* NAVPERS 18068-F, contains the enlisted classification coding structure and is the primary tool for the Navy Enlisted Classification (NEC) coding of manpower authorizations and personnel.

NECs must be reviewed and verified to ensure accuracy and currency upon detachment, receipt, annual service record verification, change in rate or rating, separation, reenlistment, transfer to the Fleet Reserve, or retirement of personnel.

Enlisted personnel in the engineering department arc assigned to divisions by the engineer officer according to the ship's personnel assignment bill. The division officer assigns enlisted personnel of the division to battle station and condition watches according to the ship's battle bill and to regular duties and watches according to various ship's bills.

THE CHIEF PETTY OFFICERS.— The primary duty of the chief petty officer (CPO) is to help the division officer coordinate and administer the division, The CPO uses his experience to develop a thorough understanding of the functions, directives, and equipment of the division so he can assume duties in the absence of the division officer.

Depending on the division organization and his professional ability, the CPO may assist the division officer in the following duties:

- Supervise the preparation and maintenance of the watch, quarter, and station bill and such other bills as may be necessary for the operation of the division.
- Help formulate and implement policies and procedures for the operation of the division.
- Supervise the division in daily routine, and conduct frequent inspections to assure division functions are properly executed.
- Help administer discipline within the division.
- Evaluate individual performances of division personnel and recommend periodic grades to the division officer.
- Provide counsel and guidance to division personnel.
- Ensure the proper preparation, maintenance, and submission of logs, records, and reports required of the division.
- Perform such other duties as may be assigned by the division officer or other competent authority.

THE PETTY OFFICERS.— Personnel of the YN and engineering and hull ratings make up the complement and allowance of petty officers for the engineering department. The engineering and hull ratings were listed under the engineering divisions earlier in this chapter.

BTs operate marine boilers and fireroom machinery, test and inventory fuels and water; perform preventive and corrective maintenance of boilers, pumps, and associated equipment; and prepare and maintain records, reports and logs.

HTs plan, supervise, and perform tasks necessary to fabricate, install, and repair all types of shipboard

structures, plumbing, and piping systems; qualify in the techniques, skills, and use of damage control, CBR defense, and fire fighting; organize, supervise, and train personnel in maintenance, hull repair, CBR defense, and damage control; supervise and perform tasks in procurement and assurance of supplies and repair parts; instruct personnel and enforce safety and security precautions; and prepare records and reports.

DCs plan, supervise, and perform tasks necessary for damage control, ship stability, preservation of watertight integrity, fire fighting, and CBR warfare defense; instruct and coordinate damage control parties; instruct personnel in the techniques of damage control and CBR defense; supervise and perform tasks in procurement and issuance of supplies and repair parts; and prepare records and reports.

EMs operate electrical light and power generating, distribution, and control equipment; perform preventive and corrective maintenance of electrical generators, switchboards, motors, lighting fixtures, closed circuit television systems, and other electrical equipment including small boat electrical systems; and prepare and maintain electrical logs, records, and reports.

ENs operate internal combustion engines and diesel propulsion plants, diesel generators, distilling plants, refrigeration and air-conditioning systems, small boat propulsion equipment, hydraulic systems, and other auxiliaries such as cranes and winches; perform preventive and corrective maintenance of assigned machinery, material, and systems; and prepare and maintain required logs, records, and reports.

ICs operate gyrocompass systems, IC systems, and closed circuit television equipment; perform preventive and corrective maintenance of gyrocompass systems, IC systems, sound-powered and automatic telephone systems; and prepare and maintain required logs, records, and reports.

MRs repair shipboard machinery using machine shop equipment such as lathes, milling machines, boring mills, grinders, power hacksaws, drill presses, and other machine tools; perform preventive and corrective maintenance on shop machinery; and prepare and maintain shop files, records, and reports.

MMs operate steam propulsion machinery and associated auxiliaries, turbogenerator plants, distilling plants, refrigeration and air-conditioning systems, and other auxiliary machinery such as steering engines, anchor windlasses, and cranes and winches; perform preventive and corrective maintenance on shop machinery; and prepare and maintain shop files, records, and reports.

GS is a general rating at the E-8 and E-9 level. GSE (electrical) and GSM (mechanical) are service ratings up to E-7. They operate, repair, and perform maintenance on gas turbines, associated auxiliaries, main propulsion machinery, propulsion control systems, and the electrical and electronic circuitry associated with gas turbine systems and prepare and maintain required logs, records, and reports.

Firemen (FN) stand messenger, cold iron, and fire watches, and any other watch for which they are qualified according to PQS. They are required to clean assigned spaces and equipment; make minor repairs to engineering equipment and material and the ship's hull depending upon the rating for which they train. They record readings on various engineering equipment; participate in general drills; and perform general detail duties. Normally, each division in the engineering department is assigned enough FNs to provide replacements for losses of petty officers.

ENGINEERING DEPARTMENT WATCH ORGANIZATION

The primary objective of the ship's watch organization is security of the ship under all probable conditions. Optimum efficiency in administration is a secondary objective. The TYCOM establishes requirements for degrees of readiness and for condition watches.

Normally, the security of the ship is adjusted to the demands of the current situation by the use of one of six general degrees of readiness. These are based upon the probability of battle as related to the combat ability of the forces required to meet the threat. Condition watches are the ship's watch organizations that provide for the manning of watch stations to meet the various general degrees of readiness.

The first general degree of readiness requires complete readiness of the ship for immediate action. Condition watch I provides for the first degree of readiness.

The second general degree of readiness allows temporary relaxation from the first degree of readiness. This allows personnel to rest and permits designated personnel to draw and distribute meals at battle stations, Condition watch IE provides for the second degree of readiness.

A special general degree of readiness applies only to certain ships. It provides for maintaining armament ready for immediate action for prolonged periods of time such as extended periods of shore bombardment. Condition watch II provides for the special degree of readiness.

The third and fourth general degrees of readiness are similar. The third requires a part of the armament to be ready for immediate action and the remainder on short notice. The fourth requires apart of the armament to be ready for immediate action and the remainder on prolonged notice. Condition watch III provides for either the third or fourth general degree of readiness.

The fifth general degree of readiness is generally referred to as peacetime cruising and requires no manning of armament. Condition watch IV provides for the fifth degree of readiness.

The sixth general degree of readiness applies to the ship in port under peacetime conditions and requires no manning of armament. Condition watch V provides for the sixth degree of readiness.

The administration of condition watches III, IV, and V requires the particular attention of the engineer officer and his division officers. The watch station of the other condition watches are prescribed, by billets, in the ship's battle bill. The engineering department requirements are the same for condition watch III (wartime cruising) and condition IV (peacetime cruising) in most ships. Therefore, only condition watch IV and condition watch V are discussed in detail in this publication.

To ensure a smooth transition from one of the three watch conditions (III, IV, and V) to another, each watch is divided into three sections. Each section is trained to fulfill all the duties for wartime cruising and peacetime conditions in port. With a properly trained crew, the ship may, as a matter of routine, enter port or put to sea without special adjustments in watches and without requiring abnormally long watches for key personnel.

The three sections become watches 1, 2, and 3 during condition watch III. Such watches normally rotate duties underway in successive 4-hour periods. Where practical, personnel should be assigned the same watch stations for condition watch III that they will man for condition watch I.

In port at anchor where condition watch V is permitted, each section in succession assumes the watches and duties for a period of 24 hours. Each section, where practical, may be divided into three watch units.

The three-section watch is easily modified to conform with special or local conditions. For example, if 50 percent of the ship's crew is required to remain on board at all times in a certain port, one of the sections can be split. Personnel of that section can be evenly assigned by rates and numbers to the remaining two sections. When modifications are necessary, division officers should maintain as much of the original three sections as possible.

UNDERWAY WATCHES

The watch organization for condition watch IV must provide qualified personnel for the normal underway operation of the ship in peacetime while ensuring the best economy of personnel in assignment to watches. Condition IV calls for the following conditions:

- No weapon batteries are manned.
- The engineering plant is ready for power and speeds when they are ordered.
- Material condition Yoke is set and may be modified for access during daylight hours.
- Complete surface and horizon lookout coverage is provided. Air lookouts are stationed when flight operations are in progress in the vicinity.
- The combat information center (CIC) is manned for routine purposes. Interior communications are manned as necessary. Exterior communications are manned as required to cover the communication plan in effect.
- Aircraft are in the condition of readiness required by the flight schedules.

Figure 1-6 shows the condition watch IV watch organization of a typical ship. The XO may relieve the OOD in times of danger or emergency as prescribed in the *U.S. Navy Regulations, 1990*. The navigator may relieve the OOD when authorized or directed by the CO. The lookouts and CIC watches report simultaneously to the CIC watch officer and the OOD. The steering aft watch is under operational control of the OOD but under the technical control of the engineering officer of the watch (EOOW).

Watch officers are in charge of the watch to which they are assigned. The watch officer supervises and controls the performance of those on watch under him

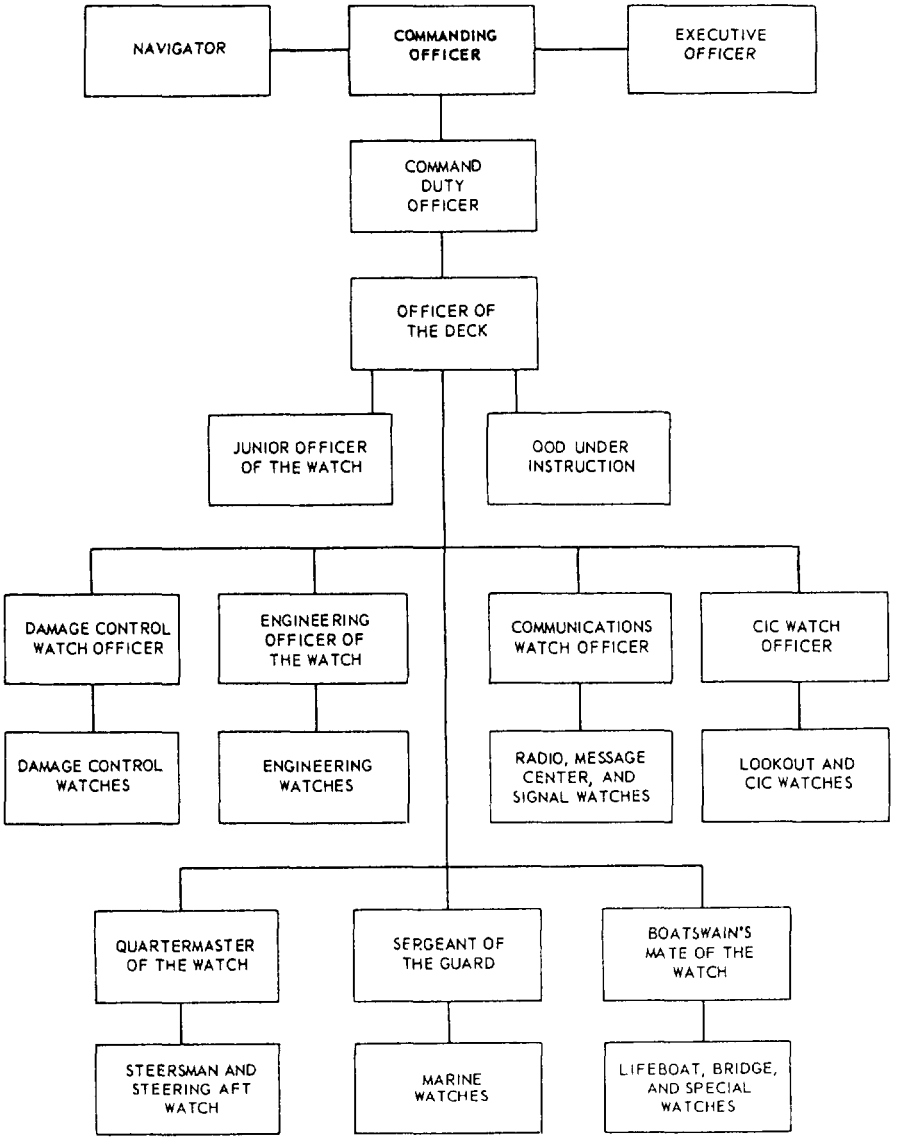

Figure 1-6.— Condition watch IV organization of a typical naval ship.

and is stationed where he can best perform his assigned duties.

The Officer of the Deck

The OOD underway and in port is the watch officer designated by the CO to be in charge of the ship. The OOD is primarily responsible for the safe operation of the ship. The *U.S Navy Regulations, 1990,* describe the duties, responsibility, and authority of the OOD; they are also discussed in considerable detail in *Naval Orientation,* NAVEDTRA 12966.

The OOD reports directly to the CO for the safe navigation and general operation of the ship. He reports to the XO (and command duty officer, if appointed by the CO) to carry out the ship's routine and to the navigator when he sights navigation landmarks and for course/speed changes. The OOD may request advice and assistance in the discharge of his duties from any person assigned to the ship for duty.

The Damage Control Watch Officer

The damage control watch officer supervises the maintenance of the material condition of readiness in effect on the ship and is responsible for the operation of the various hull systems. He has the following responsibilities:

- Maintain a rough log that includes hourly entries of the fire main pressure and the number of fire pumps in operation. The log should include such other entries as getting underway, anchoring, and mooring, general quarters, emergency drills, and setting of material conditions (with a list of discrepancies reported and the corrective action taken).

- Supervise the maintenance of the damage control log that contains violations of the prescribed material condition of readiness. Log entries must include the name and rate of the person requesting the authority to violate a prescribed condition. They must also include the time of the violation, the type of fittings involved, the estimated duration of the violation, and the actual time the material condition of readiness is restored.

- Determine the status of fuel and ballast tanks that were empty or filled during the watch and enter the information, including the number of the tanks concerned, in the rough log.

- Make hourly reports to the OOD concerning the watertight integrity of the ship.

- Make sure the ship's draft is recorded (taken, if in port, otherwise computed) daily during the 0400-0800 watch. Do it before entering or leaving port and before and after replenishment (fueling, provisioning, or rearming).

- Make sure damage control patrols sound all voids and cofferdams once each watch and report results.

- Notify the OOD, DCA, and weapons (deck) department officer when the fire alarm board indicates that the temperature of any magazine is above 105°°F.

- Maintain custody of the master key for repair party lockers and make sure it is issued only to authorized personnel.

- Make sure material condition Yoke is set before sunset. Normally, at the end of the working day (approximately 1700) the damage control watch officer asks the OOD to have all divisions check the setting of material condition Yoke and makes reports to the DCC. The damage control watch officer initiates the necessary follow-up action to ensure compliance by divisions failing to make reports.

The damage control watch officer reports directly to the OOD on matters affecting watertight integrity, stability, trim, or other conditions that adversely affect the safety of the ship. He reports to the DCA for technical control and matters affecting the administration of his watch.

The Damage Control Watch

Figure 1-7 shows the damage control condition IV watch organization. Enlisted personnel for the repair division normally man the damage control patrol (sounding and security) watches. The sounding and security watch reports to the damage control watch officer. Chief and first class petty officers of the repair division in some ships augment the watch personnel assigned the duties of the damage control watch officer.

The Engineer Officer of the Watch

The EOOW is the officer on watch in charge of the main propulsion plant and of the associated auxiliaries. On some smaller ships, the EOOW may be a senior petty officer. He is primarily responsible for the safe and efficient performance of the engineering department watches (except damage control) associated with the equipment in his charge. The engineer officer determines if an officer or petty officer of the engineering department is qualified. If so, the engineer officer assigns him to the watch. The engineer officer or, in his absence, the MPA is authorized to direct the EOOW concerning the duties of the watch when such action is considered necessary. The EOOW has the following responsibilities:

- Make frequent inspections of the engineering department machinery (boilers, engines, generators, evaporators, and auxiliaries) to make sure they are operated according to current instructions. Make sure required logs are properly kept; machinery and controls are properly manned; all applicable inspections and tests are being performed; and all applicable safety precautions are being observed.

- Frequently monitor IC circuits in use to make sure required circuits are properly manned, circuit discipline is being maintained, and correct message procedures and terminology are being used.

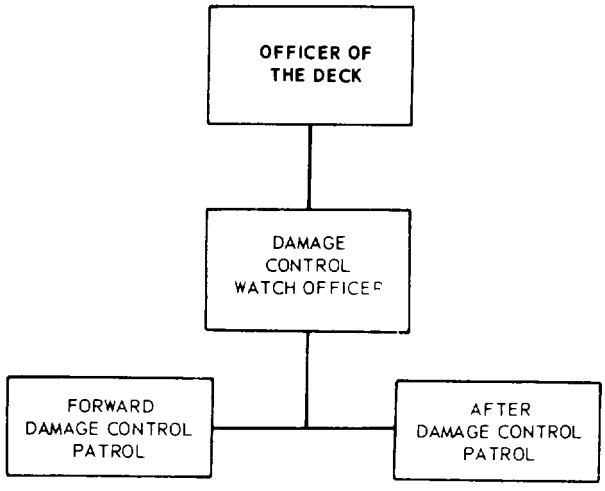

Figure 1-7.— A typical condtion watch IV damage control watch organization.

- Make sure all orders received from the OOD concerning the operation of the engines are promptly and properly executed and the Engineering Log and the Engineer's Bell Book are properly kept.

- Immediately execute all emergency orders concerning the operation of the engines.

- Keep the OOD and the engineer officer informed of the condition of the main propulsion plant and of the maximum speed and power available with the boiler and machinery combinations that are in use.

- Make sure all directives and procedures issued by higher authority are followed when they concern the operation of the engineering department machinery.

- Know the power requirements for all possible operations and determine that the boiler and machinery combination in use meets current operational requirements. Advise the engineer officer and the OOD when the machinery combination should be modified. Inform the OOD of any necessary changes to the operation of boilers, main engines, generators, and other major auxiliaries.

- Supervise the training of the personnel of the watch during the watch. Carry out operational training primarily through investigation, demonstration, and drill while personnel actually perform duties of the watch. Insist that each person in charge of an engineering watch station carefully instruct the personnel under his charge in his specific duties and in the duties of all persons on the same watch station.

- Report to the OOD for changes in speed and direction and for requirements of standby power and other engineering services anticipated or ordered. Report to the engineer officer for technical control and matters affecting the administration of the watch. Perform such other duties as the engineer officer may direct.

When an officer in engineering is under instruction, his watches should be rotated to give him an opportunity to serve with all the qualified officers rather than only one of them. This helps the officer under instruction develop a more thorough understanding of the functions and characteristics of the machinery, equipment, and systems of the engineering plant. Each EOOW will either be a division officer or one of the engineer officer's assistants and will have a special knowledge of a different part of the plant.

Engineering Watches

Figure 1-8 shows the engineering condition IV watch organization for a typical ship. The structure of

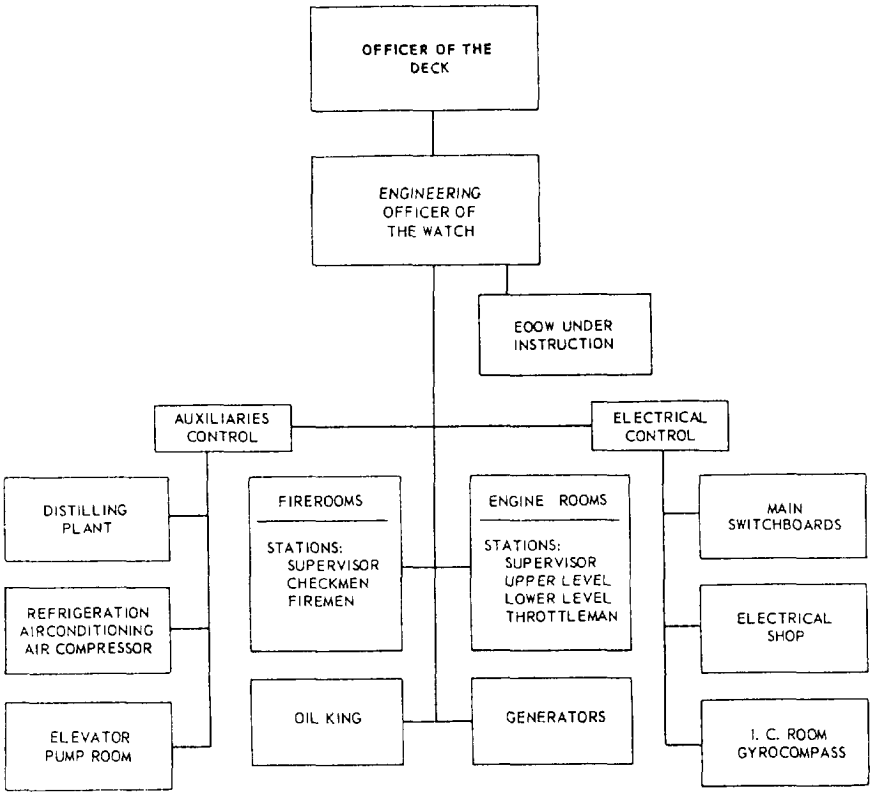

Figure 1-8.—A typical condition watch IV engineering watch organization.

the watch organization is determined by the type, arrangement, and location of the machinery in the engineering plant and generally differs according to the type of ship. The engineering watch organization, as well as the instruction for each watch station, must be included in the engineering department organization and regulation manual. Instructions for the watch must be posted at each watch station. The engineering divisions normally man the watch station described in the following paragraphs:

E division personnel normally man an underway watch at each operating main distribution switchboard and in the IC room, gyrocompass room, and electrical shop.

A division personnel normally man underway watches associated with the distilling plant, refrigeration and air-conditioning systems, air compressors, and hydraulic systems in elevator pump rooms and the steering gear room. The A division also assigns a person as small boat engineer.

M division personnel normally man underway watches in the engine rooms and shaft alleys. The M division also assigns someone to operate the electrical generators.

B division personnel man the boiler watches in the firerooms. B division also assigns a senior petty officer to perform the duties of oil king.

Division officers assign personnel to underway watches according to the engineering department organization and regulations manual.

IN-PORT WATCHES

This chapter covers the normal peacetime in-port watch organization. Additional watches to man weapons systems and security stations and to prevent sabotage must be established in an emergency or in wartime. Figure 1-9 shows the watch organization for condition watch V. It provides enough qualified personnel for the normal peacetime operation of the ship in port.

The Command Duty Officer

Any officer on the ship who is eligible for command at sea may be assigned as command duty officer (CDO) in port. This includes the engineer officer. The CO designates the CDO as deputy to the XO to carry out the routine of the ship in port and to supervise and direct the OOD in matters concerning the safety and general duties of the ship. The CDO performs the duties of the XO in that officer's temporary absence.

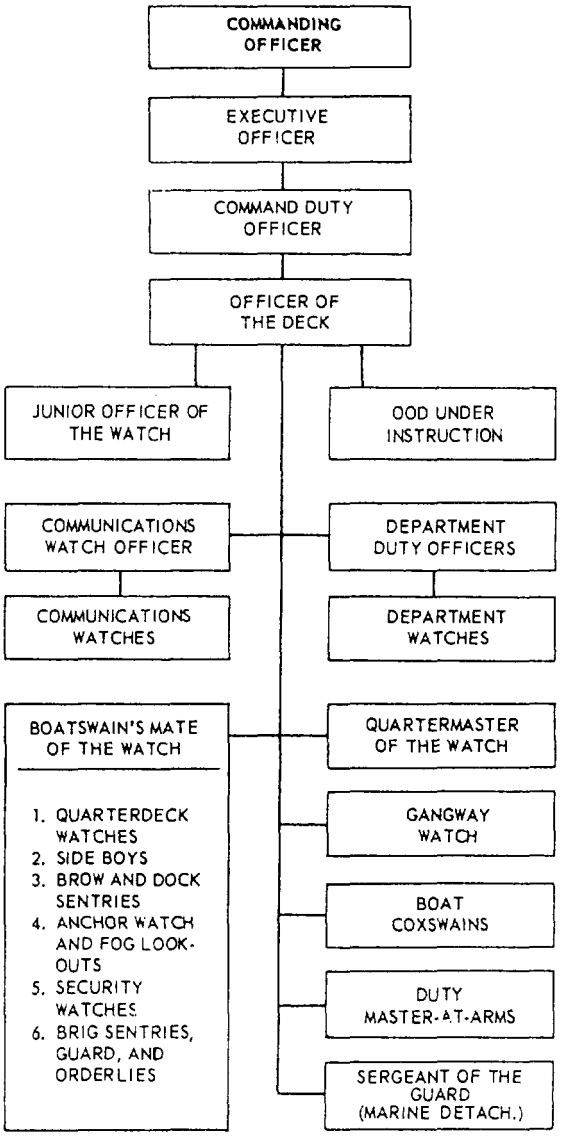

Figure 1-9.-Condition watch V organization of a typical naval ship.

The Engineering Department Duty Officer

In ships not underway, the CO may authorize the EOOW to stand day's duty instead of a continuous watch. At these times, the EOOW's duties may be assigned to the engineering department duty officer. While the engineering department duty officer is not required to stay at the EOOW station, he must always be ready to appear the moment he is summoned. The engineering department duty officer is assigned by the engineer officer and must be qualified according to TYCOM directives.

In the temporary absence of the engineer officer, his duties may be performed by the engineering department duty officer. If the engineer officer is on board, the duty officer reports the condition of the department to him before the 2000-hour reports. In the absence of the engineer officer, the duty officer makes the 2000-hour reports for the department to the XO or CDO.

The engineering department duty officer has the following responsibilities in addition to other duties that may be assigned:

- Be sure engineering watch personnel are alert and perform properly.
- Be sure engineering machinery and systems are operated safely and economically.
- Eliminate fire and flooding hazards and prevent sabotage.
- Be sure all engineering spaces are secure. Hold frequent inspections of engineering spaces to determine conditions and the performance of watch personnel.
- Be sure all machinery operating logs are maintained and write and sign the engineering log for the period he is on duty.

The engineering department duty officer makes reports in the same manner as the EOOW, but when acting in place of the engineer officer, he makes the reports required of that officer. Engineering watch supervisors and the duty petty officers of the engineering divisions report to the engineering department duty officer.

A chief petty officer who is a qualified engine room watch supervisor underway may be assigned a watch as the engineering department duty chief petty officer to help the engineering department officer during his watch.

Engineering Watches

The engineer officer is responsible for the condition watch V (in port) organization of the engineering department. The type and amount of machinery and equipment used in port is mainly governed by the services the department is required to furnish.

Regardless of what services are furnished by the department, certain personnel are required to ensure the safe and efficient operation of the department when key personnel are temporarily absent. A responsible petty officer in the duty section of each engineering division must be designated to act in the absence of the division officer and leading petty officers. The division duty petty officer has the following responsibilities in addition to other duties that may be assigned:

- Be sure division watch personnel promptly and properly man assigned watch stations.
- Inspect all spaces for which the division is responsible. Inspect watch stations and check on the alertness of the personnel on watch. Make sure personnel follow proper operating procedures and obey all orders and instructions that apply. Make sure all spaces are clean, free of fire and flooding hazards, and contain no unauthorized persons.
- Muster division personnel and make reports as required.

The division duty petty officers report to the engineering department duty officer and call on them for guidance or help. Generally, the division duty petty officer reports the condition of his division to the engineering department duty officer before 2000 each evening.

Certain engineering department personnel are required to furnish services or operate equipment regardless of other services required of the department. The engineering watches always assigned in port include the duty oil and water king (B division), the duty EM (E division), the duty HT (R division), the duty A-gang (A division), and the duty boat engineer (qualified personnel of any engineering division).

The engineering department is usually required to furnish steam, electric power and lighting, and fresh water or feedwater when the ship is in port. only auxiliary machinery is needed to supply the required services, and the necessary watch is referred to as the auxiliary watch. The auxiliary watch is usually made up of the following watches and duties.

The security watch regularly inspects idle machinery spaces and sound voids. The fireroom watch operates the necessary boiler room machinery. The engine room watch operates the necessary ship's service generators. The electrical watch operates the necessary main electrical distribution switchboards, and the evaporator watch operates the distilling plant as necessary.

When the ship is receiving fresh water, steam, and electrical power from the pier or a ship alongside, the auxiliary watch is replaced with the cold iron watch in the machinery spaces. The cold iron watch generally is made up of a security watch stationed in each engine

room and fireroom. The watch is assigned to prevent sabotage and damage from other causes, to keep out unauthorized personnel, and to detect and eliminate fire hazards, flood hazards, and other potentially dangerous conditions. At the same time, cold iron watches are stationed in other important idle machinery spaces. If not, the engine room and/or fireroom watches periodically inspect additional spaces. A cold iron watch should be stationed in otherwise unoccupied idle firerooms and engine rooms underway as well as in port. A responsible petty officer must be assigned to supervise the cold iron watch.

The engineer officer should require posting of the daily watch list at least 24 hours in advance. The engineer officer or his representative must approve and sign the watch bill, and it may not be changed without approval from one of those officers.

DIRECTIVES

Directives are instructions or notices used by a command at any level to prescribe policies, organizations, procedures, and methods that serve as guides to control the decisions and action of subordinates. The Navy Directives Issuance System *Manual*, SECNAVINST 5215.1C, establishes the directives system for the Navy and sets forth a simple and uniform plan for issuing, filing, and maintaining directives under the system. Directives are assigned identifying numbers according to their subjects as listed in the *Department of the Navy File Maintenance Procedures and Standard Subject Identification Codes*, SECNAVINST 5210.11D.

The following definitions of policies, procedures, orders, instructions, and regulations are necessary to understand the purpose of directives.

- A military **POLICY** prescribes the course of action to be followed in a given situation. Policies should be written, for they are used to gauge the action required in recurring situations. Policies established at the top levels are broad and general, whereas those established at lower levels must be more specific and conform to the higher level policies.

- A military **PROCEDURE** is a series of coordinated steps laid out for the performance of functions.

- A military **ORDER** is a formal oral or written command, issued by a superior officer to a subordinate. It establishes a rule or regulation or delegates authority for the performance of a function.

- An **INSTRUCTION** gives information concerning the methods used to accomplish a mission. It specifies the manner and conditions of performance in the execution of projects and programs.

- A military **REGULATION** is a rule that sets forth standards governing or restraining the conduct of individuals.

- Navy **INSTRUCTIONS** are directives that have a long-term reference value and continue in effect until canceled by the originator. Instructions may contain information of a continuing nature or information that requires continuing action. Instructions also direct action that cannot be completed in the near future or action that must be taken at a future date.

- Navy **NOTICES** are directives that apply for a brief period of time (usually 6 months or less) and provide for automatic cancellation on a prescribed date or under a certain condition. Notices may require action that can be completed upon receipt or they may contain announcements and items of current interest.

Directives may be in the format of a letter or publication. A letter type is made up of one or several pages much like any other letter. A publication type is normally equipped with covers and contains a title page, a letter of promulgation, a record of changes page, a table of contents, and an alphabetical index of contents. The *Standard Organization and Regulations of the U.S. Navy*, OPNAVINST 3120.32B, is a publication-type directive. Certain shipboard directives are excluded from the directives system. They are the captain's night order book, the ship's plan of the day, the engineer officer's night order book, the OOD's standing order book, and the OOD's memorandums.

The CO issues the ship's directives system by issuing two instructions. One instruction prescribes the directives to be used in the system, the responsibilities of the originators of the directives, the directives control points and their functions, instructions for department and divisional use of the systems, and standards for reproducing the ship's directives. The other instruction issues the distribution lists for the ship's directives.

The ship's directives system provides for the wide dissemination of the policies of the CO, the XO, and the heads of departments. It supplies subordinate officers with a way to issue amplifying and supplementary instructions that place the policies and procedures in effect. The system makes sure the ship's policies and procedures are in keeping with those of the Navy Department and of fleet and TYCOMs by permitting

integration of the ship's directives with those from higher authority.

Directives can be useful tools for the engineer officer. They must be clear, concise, and readily understood. The format and arrangement are prescribed in the *Department of the Navy Directives Issuance System Manual,* SECNAVINST 5215.1C. The engineer officer and other officers of the engineering department are required to maintain directives binders according to the COs instruction. The binders should contain all directives (properly indexed and arranged) pertaining to the officers' jobs.

SHIP'S BILLS

The Standard Organization and Regulations of the U.S. Navy, OPNAVINST 3120.32B, contains the ship's bills that guide the assignment of personnel to duties or stations for the purpose of accomplishing certain functions. Each ship's bill is classified as an administrative, operational, or emergency bill. The watch, quarter, and station bill is an amplification of the *Standard Organization and Regulations of the U.S. Navy.*

Administrative bills are ship's bills that facilitate the assignment of personnel individually or by groups to stations or duties that pertain to routine operations or evolutions of the ship. Operational bills include the special sea detail bill, replenishment at sea bill, rescue and assistance bill, landing party bill, and visit and search, boarding, and prize crew bill.

Emergency bills are ship's bills that provide for the assignment of personnel individually or by groups to stations or duties to cope with emergencies. Emergency bills include the general emergency bill, man overboard bill, and the CBR warfare defense bill.

TYCOMs furnish ships the type of information necessary to permit detailed assignment of personnel. The responsibility for and maintenance of each ship's bill is assigned to a key officer, usually a head of a department. Each bill must give division officers enough guidance to permit assignment of personnel by name. Each bill must have a preface containing a statement of purpose, assignment of responsibility for maintenance of the bill, and information supplying background or guidance. It must have a tabulation showing assignments of individuals by billet or rate to stations or duties. It must also have a procedure containing all information and policies necessary to interpret the tabulated material. The procedures must include special responsibilities of individuals with regard to planning, organizing, directing, or controlling the function or evolution to which the bill relates.

The engineer officer is responsible for the maintenance of the rescue and assistance bill, general emergency bill, and CBR defense bill. The rescue and assistance bill provides a special organization equipped and qualified to render assistance to persons or activities outside the ship or to perform related functions. The general emergency bill provides the optimum organization needed to counteract major emergencies and to abandon ship in an emergency. The CBR warfare defense bill provides an organization and prescribes the procedures to minimize the effects of a biological or chemical attack.

Each division officer is responsible for publishing and maintaining a watch, quarter, and station bill, which is a summary of his assignments of personnel to station and duties according to the battle bill and each of the ship's bills. The watch, quarter, and station bill is arranged in standard tabular form. It has columns to enter each individual's name and rate, data from the battle bill, and duties assigned under each of the ship's bills. The watch, quarter, and station bill should be prominently posted in a space that is frequented by all personnel of the division.